CLAIMS

1. An electric motor movement controlling method, the electric motor being fed by a total voltage (V_T) proportional to a network voltage (V_{AC}),

the method being characterized by comprising the steps of:

- making a first measurement of level (V_{t10}) of the network voltage (V_{AC}) at a first moment of measurement ($t1_0$);

- making a second measurement of level (V_{t20}) of the network voltage (V_{AC}) at a second moment of measurement ($t2_0$);

- calculating the value of the derivative of the voltage values measured in function of the first and second moments of measurement ($t1_0$, $t2_0$), to obtain a value of a proportional network voltage (V_{AC}'); and

- altering the value of the total voltage (V_T) fed to the motor, proportionally to the value of the proportional network voltage (V_{AC}').

2. A method according to claim 1, characterized in that the value of the total voltage (V_T) is altered in function of the difference between the value of the proportional network voltage (V_{AC}') calculated in a present cycle of the network voltage (V_{AC}) and the value of the proportional network voltage (V_{AC}') calculated in the previous cycle of the network voltage (V_{AC}).

3. A method according to claim 1, characterized in that the value of the total voltage (V_T) is altered in function of the difference between the value of the proportional network voltage (V_{AC}') calculated in a current semi-cycle of the network voltage (V_{AC}) and the value of the proportional network voltage (V_{AC}') calculated in the previous semi-cycle of the network voltage (V_{AC}).

4. A method according to claim 2 or 3, characterized in that the value of the proportional network voltage (V_{AC}') is obtained from the equation:

$$V_{AC'} = f\left(\frac{\partial V_0}{\partial t}\right)$$

wherein ∂V_0 is obtained by subtracting the first and second measurements of level (Vt_{10}, Vt_{20}), and the value of at is obtained by subtracting the values of

the first and second moments of measurement ($t1_0$, $t2_0$).

5. A method according to claim 3, characterized in that after the step of obtaining the value of proportional network voltage (V_{AC}') one foresees a step of:

- measuring the lag time (t_D) between the occurrence of the measurement of the first moment of measurement ($t1_0$) and the occurrence of the measurement of the second moment of measurement ($t2_0$),

- comparing the lag time (t_D) with a pre-established time (t_P),

- altering the value of the total voltage (V_T) proportionally to the value of the proportional network voltage (V_{AC}'), the value of proportional network voltage (V_{AC}') being proportional to the lag time (t_D), when the lag time (t_D) is different from a pre-established time (t_P).

6. A method according to claim 5, characterized in that the pre-established time corresponds to the lag time (t_D) of the previous cycle of the network voltage (V_{AC}).

7. A method according to claim 6, characterized in that the in the step of altering the total voltage (V_T) the elevation of the total voltage (V_T) if the lag time (t_D) is longer than the pre-established time (t_P) is foreseen.

8. A method according to claim 7, characterized in that in the step of altering the total voltage (V_T) the diminution of the total voltage (V_T) if the lag time (t_D) is shorter than the pre-established time (t_P) is foreseen.

9. A method according to claim 8, characterized in that the value of the total voltage (V_T) corresponds to a difference between the value of the piston voltage (V_P) and the value of the proportional network voltage (V_{AC}'), the value of the piston voltage (V_P) being previously established.

10. A method according to claim 1, characterized in that the total voltage (V_T) feeds an electric motor of a compressor, the compressor comprising a piston.

11. An electric motor movement controlling method, the electric motor being fed by a total voltage (V_T) proportional to the network voltage (V_{AC}), the method being characterized by comprising the steps of:

- measuring the network voltage (V_{AC}) at a first moment of meas-

urement ($t1_0$);

- measuring the network voltage (V_{AC}) at a second moment of measurement ($t2_0$), the second moment of measurement ($t2_0$) being different from the first moment of measurement ($t1_0$) and the second measurement of the network voltage (V_{AC}) being carried out at a voltage level different from the level of the first measurement of the network voltage (V_{AC}),

- measuring a lag time (t_D) between the occurrence of the measurement of the first moment of measurement (t10) and the occurrence of the measurement of the second moment of measurement ($t2_0$),

- comparing the lag time (t_D) with the pre-established time (t_P),

- altering the value of the total voltage (V_T) proportionally to the value of the proportional network voltage (V_{AC}').

12. A method according to claim 11, characterized in that the pre-established time (t_P) corresponds to the leg time (t_D) of the previous cycle of the network voltage (V_{AC}).

13. A method according to claim 11, characterized in that the pre-established time (t_P) corresponds to a mean of lag times (t_D) of the previous cycles of the network voltage (V_{AC}).

14. A method according to any one of claims 12 or 13, characterized in that the value of the proportional network voltage (V_{AC}') is proportional to the lag time (t_D).

15. A method according to claim 14, characterized in that, in the step of altering the total voltage (V_T), it is foreseen to raise the total voltage (V_T) if the lag time (t_D) is longer than the pre-established time (t_P).

16. A method according to claim 15, characterized in that, in the step of altering the total voltage (V_T), it is foreseen to lower the total voltage (V_T) if the lag time (t_D) is shorter than the pre-established time (t_P).

17. A method according to claim 16, characterized in that the value of the total voltage (V_T) corresponds to a difference between the value of a piston voltage (V_P) and the value of the proportional network voltage (V_{AC}'), the value of the piston voltage (V_P) being previously established.

18. An electric motor movement controlling system controlled by

an electronic control central (10), the system being characterized in that:

the electric motor is fed by a total voltage (V_T) controlled by the electronic control central (10), the total voltage (V_T) being proportional to a network voltage (V_{AC}),

the electronic control central (10) comprises a voltage detecting circuit (50), the voltage detecting circuit (50) detects the network voltage (V_{AC}),

the electronic control central (10) makes a first level measurement (V_{t10}) of the network voltage (V_{AC}) at a first moment of measurement ($t1_0$), and makes a second level measurement (V_{t20}) of the network voltage (V_{AC}) at a second moment of measurement (t20),

the electronic control central (10) calculates the value of the values of the network voltage (V_{AC}) measured in function of the measurement times ($t1_0$, $t2_0$) measured and obtains a value of a proportional network voltage (V_{AC}'),

the electronic control central (10) altering the value of the total voltage (V_T) to a value of corrected total voltage (V_T'), proportionally to the value of the proportional network voltage (V_{AC}').

19. A system according to claim 18, characterized in that the electronic control central (10) comprises a voltage detecting circuit (50) that measures the network voltage (V_{AC}) at the established level of voltage (V_0) at the first and second moments of measurement ($t1_0$, $t2_0$).

20. A system according to claim 19, characterized in that the first and second level measurements (Vt_{10}, Vt_{20}) are carried out, respectively, at a first level of the network voltage (V_{M1}) and at a second level of the network voltage (V_{M2}).

21. A system according to claim 20, characterized in that the voltage detecting circuit (50) comprises a first voltage detecting circuit (51) that detects the first level of the network voltage (V_{M1}).

22. A system according to claim 21, characterized in that the voltage detecting circuit (50) comprises a second voltage detecting circuit (52) that detects the second level of the network voltage (V_{M2}).

23. A system according to claim 22, characterized in that the first voltage detecting circuit (51) is adjusted for measuring the first level of the network voltage (V_{M1}) at the time of the respective passage by a zero level.

24. A system according to claim 23, characterized ion that the second voltage detecting circuit (52) is adjusted for measuring the second level of the network voltage (V_{M2}), the second level of the network voltage (V_{M2}) being located between the zero level of the network voltage (V_{AC}) and a maximum level of the network voltage (V_{ACM}).

25. A system according to claim 24, characterized in that the electronic control central (10) measures a lag time (t_D) between the occurrence of the measurement of the first level of the network voltage (V_{M1}) and the occurrence of the measurement of the second level of the network voltage (V_{M2}), the measurements of the first and second levels of the network voltage (V_{M1}, V_{M2}) being carried out by the voltage detecting circuit (50), the electronic control central (10) comprising a time counting device that compares the lag time (t_D) with a pre-established time (t_P) and alters the total voltage (V_T) proportionally to the lag time (t_D).

26. A system according to claim 25, characterized in that the electronic control central (10) generates a value of a proportional network voltage (V_{AC}'), value of voltage (V_{AC}') being proportional to the value of the lag time (t_D), and the electronic control circuit (10) altering the value of the total voltage (V_T) to a value of corrected total voltage (V_T) proportionally to the value of the proportional network voltage (V_{AC}') when the lag time (t_D) is different from the pre-established time (t_P).

27. A system according to claim 26, characterized in that the electronic control central (10) raises the value of the total voltage (V_T) to a value of corrected total voltage (V_T') if the lag time (t_D) is longer than the pre-established time (t_P).

28. A system according to claim 27, characterized in that the electronic control central (10) lowers the value of the total voltage (V_T) to a value of corrected total voltage (V_T') if the lag time (t_D) is shorter than the pre-established time (t_P).

29. A system according to claim 28, characterized in that the second voltage detecting circuit (51) signals the passage of the level of the network voltage (V_{AC}) in the second level of voltage (V_{M2}) through a voltage comparator (53), the voltage comparator (53) generating a square wave having a transition moment, the lag time (t_D) being measured between the occurrence of the first level of the network voltage (V_{M1}) and the transition moment.

30. A system according to claim 29, characterized in that the total voltage (V_T) feeds an electric motor of a compressor, the compressor comprising a piston,

the electronic control central (10) comprising a value of defined voltage (V_P), the defined voltage (V_P) being proportional to an error (E_{DP}) between a reference displacement position (DP_{REF}) and a maximum displacement (DP_{MAX}) of the piston,

the reference displacement position (DP_{REF}) being proportional to the position of the piston in the compressor, and

the maximum displacement (DP_{MAX}) being proportional to a desirable displacement of the piston in the compressor.

31. A system according to claim 30, characterized in that the signal generating circuit (50) comprise a D/A converter.

32. A compressor having a system characterized by comprising a system such as defined in claims 18 to 30.